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COMMAND AND CONTROL FOR SELECTIVE RESPONSE

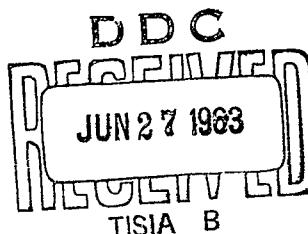
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COMMAND AND CONTROL FOR SELECTIVE RESPONSE<sup>1</sup>

During the past several years, there has been a growing awareness that an effective strategic capability requires more than survivable forces, some warning and defensive capability, and a plan and resolve to employ these resources. It also depends upon a command capability whereby national political or military leaders can operate or control the resources according to the plan. This recognition has caused new emphasis to be placed on the problem of command and control.

This chapter considers command and control in the conduct of two different strategies of central nuclear war: first, a spasm war that unleashes an unlimited nuclear strike as quickly and thoroughly as possible; second, a strategy of selected response that allows deliberate commitment of small, moderate, or very large portions of the strategic offensive capacity of the United States in accordance with both military and political considerations. The command and control required for conduct of limited strategic war<sup>2</sup> is then considered in relation to these two alternatives.

The paper concludes that, in the next decade, it is both feasible and desirable for our command-and-control system to provide the capability for a selected response. Next, that such a command-and-control capability would, in most cases, allow employment of a substrategy of limited strategic war and that provision of this latter feature would require minor, but not costly, additions in plans and doctrines. Finally, that acquisition of an operational capability for either limited strategic war or for a war of selective response presents some command-and-control needs that do not apply to spasm response.

In summary, it is argued that a command-and-control system can be established that permits the deliberate use of limited retaliation as an element of United States strategy. On the other hand, consideration of political, diplomatic, and broad strategic factors could easily militate against adoption of that strategy. Before developing these points, it may be helpful to define the sense in which the term "command and control" is used here and to suggest several factors that have caused it to receive growing attention.

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<sup>1</sup> Most of the points developed here have been generated during numerous discussions and correspondence with Daniel Ellsberg of The RAND Corporation, Santa Monica, Calif.; Thornton Read of the Center of International Studies, Princeton University; and the Bell Telephone Laboratories, Murray Hill, N.J. See Thornton Read's Command and Control (Policy Memorandum No. 24, Center of International Studies, Princeton University, June 15, 1961).

<sup>2</sup> As defined in Knorr and Read, Limited Strategic War (New York: Frederick A. Praeger, 1962), pp. 3-31.

## The Nature of Command and Control

In essence, command and control is the flow of information in a system that connects operational forces and sensors with the operational commanders who deploy, alert, or commit these resources. The system extends from the commander in chief to the field. A useful analogy is often drawn between a neural network and a command-and-control complex, but the military system is far richer and more variegated than its analog. The command-and-control system consists of men, doctrine, tradition, and training; of organizations, chains of command, and chains of succession; of communications, traffic centers, command posts, displays, and computers. This system must develop war plans, train and maintain forces, deploy and alert these forces, monitor their readiness, assess enemy capability and threats, report estimates of situations, implement decisions with more decisions, coordinate actions, monitor progress, and correct where possible. Within the system, information is constantly communicated, translated, filtered, detected, abstracted, aggregated, enhanced, or added. Like all complex information systems, command and control is subject to delay, disruption, inconsistency, ambiguity, uncertainty, misunderstanding, and often ignorance.

Until recently, the command-and-control function received relatively little attention in the strategic debates of alternate central-war strategies. No doubt, this lack of discussion stemmed in part from the very sensitive nature of command capabilities. War plans and effectiveness of command have always been the most highly classified data in a nation's military posture. Although nonmilitary analysts have seldom been deterred from considering such matters, only relatively recently has the command-and-control dimension of military capability been given a proper role in strategic calculations.

One factor that has promoted neglect of command and control is succinctly symbolized in Herman Kahn's quotation attributed to General Aphorism: "If these buttons are ever pressed, they have completely failed in their purpose! The equipment is useful only if it is not used."<sup>3</sup> If one agrees completely, then the buttons need never be wired. If one is only slightly more realistic, the buttons are wired and the system is exercised, but the question is never seriously raised as to how well or how long the command would be able to operate in several different thermonuclear environments. For example, if a command center were destroyed, or if its higher command were destroyed, or if communications were cut, how would the force be applied? One could erect a facade of survivable, controllable weapons, could demonstrate a force and sensor capability that would be extremely credible in case the deterrent failed, and could still substantially ignore the command system needed to restrain or commit the force when the deterrent had failed. Fortunately, it

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<sup>3</sup>Herman Kahn, On Thermonuclear War, (Princeton University Press, 1960), p. 17.

would seem that such an attitude has not been prevalent among all those responsible for command or for developing assists to command. As only one example, the Strategic Air Command seems to have been intensely concerned with realistic operational capability.

Interest in command and control has been stimulated by the growing reliance of the operational military commands on the scientific and industrial community for technical assistance and tools used in the command process. Burgeoning technology has produced weapons and sensors and threats that have made the command problem much harder to solve. As our armamentarium has become more technological, its elements have become harder to understand to plan for, to command.

An outstanding example of this increasing complexity is the development of a warning radar system for ballistic missiles and satellites. Here we might have a large, one-of-a-kind, operational system for detecting missile nose cones or satellites that are approaching the country from several directions. In order to understand the meaning of the displayed information, the commander and his staff would need to be continuously updated on developments in enemy launching capability, missile configuration, and nose-cone and satellite characteristics; enemy spoofing, or jamming capability; effects of atmospheric auroral, and other natural phenomena; results of United States' testing of similar systems in development and the effects of natural phenomena on these systems; the most recent configuration of the changing system; its detection logic and communications; and, most important, the kind of reliance that is placed on the warning by the commanders of offensive forces and by the national command. In other words, the warning system would not detect unequivocally a swarm of objects at some known time after impact. The system would be subject to electronic counterwarfare, false alarms, destruction, deception, or ambiguity, and the commanders must be able to assess these incredibly complex variables and their interrelations.

In addition to the stresses on the command process introduced by the use of more complicated weapons and sensors, a trend has emerged during the past decade toward the use of the new developments in information-handling as integral elements of the command process. Under the assumption that the command process is inadequate without some automation, or in the hope that a strategic advantage can be gained by using automation, commanders are turning to improved communications, switching devices, sensors, computers, computer programs, and displays as elements of their command-and-control system.

Typically, two problems are cited as reasons for basic changes in the command-and-control system: the proliferation of information and the compression of time. Proliferation of information results as new sensors and improved communications overwhelm the commander and his staff with mountains of data on our own and on the enemy's status. Some experts hope that computers will

help detect patterns in this information that will indicate a new enemy capability for offense or defense, signals of enemy alert or intention of attack, and critical weaknesses in our posture.

The compression of time results from knowledge that enemy forces can be brought into action within a few hours or even minutes, that warning of initial attack may at best be available for only a fraction of these times, that our own forces may be extremely vulnerable to such strikes, and that our own centralized command-and-control systems may be even more vulnerable than our more dispersed forces.

An excellent example of this concern about time compression and voluminous data is furnished in a recent Reporter article: "The only interruption in the sequence [of automated command and control], except for the system's own safety checks and repeats, would be a token one of a few minutes for the President of the United States to exercise freedom of will and say 'fire.'"<sup>4</sup> It is interesting that the only reservations mentioned in the article and in subsequent letters commenting on this statement concerned extending the decision time for the "fire" instruction, making the automated equipment more accurate, questioning whether such equipment could be built, and involving the Congress in Presidential decision to say "fire." The author called this decision the "choiceless choice."

Clearly, some very useful progress has been made in the application of new technology to the command process. However, unrealistic promises and expectations may threaten command effectiveness, validity, coordination, and flexibility. There is a growing awareness that the new technology cannot be applied as it is when a weapons system is being developed. Progress must be more evolutionary, the information system must be developed within the using command as an integral part of its own command process, and the using commands must enhance their own technical capabilities or else lose understanding and control of their resources. Finally, although the application of new technology to the command process is unlikely to affect the strategic balance during the next decade to anywhere near the extent that the emergence of nuclear weapons and intercontinental delivery vehicles did, it has become widely recognized that command-and-control capability--that is, the capability of the diverse and complex elements of men, organization, plans and equipment--can have a significant effect on the development and use of weapons.<sup>5</sup>

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<sup>4</sup> David Bergamini, "Government by Computers?" The Reporter, XXV (August 17, 1961), 26. This is an excellent article on computers in all phases of government: planning, intelligence, logistics, etc.

<sup>5</sup> These questions on the promise and use of technology in problems of military command are discussed further in Read, op. cit.; Bergamini, op. cit.; and Institute for Defense Analyses, Computers in Command and Control (Technical Report No. 61-12, November, 1961).

## Spasm Wars

Having considered some of the operational and technical causes of the increased concern with the role of command and control, let us now compare the needs for command and control under two different modes of response--spasm and selective.

In the spasm concept of central war, political considerations no longer affect the conduct of the war after enemy actions have crossed some threshold--beyond which point strategic offensive power would be delivered as quickly and effectively as possible to inflict maximum damage on the enemy. Although the arguments for a spasm-war strategy differ from those that led to the demand for unconditional surrender in World War II, there are striking analogies both in the conduct of these wars and in the roles of the commanders.

The absence of political considerations during the conduct of the spasm war does not mean that political factors cannot have a strong influence on the war plan. The selection of such a strategy is in great part political. It assumes either that intrawar negotiation and bargaining will be fruitless, or that the prospect of a less than total response will cause a poorer outcome and will weaken the deterrent--for example, by making it less risky for an enemy to attempt a disarming attack and subsequent blackmail. Other prewar political effects on the spasm-war plan might include designation of nations to be attacked, or of maximum allowable fallout or collateral damage to allies and neutrals. Even maximum allowable nuclear detonation within enemy territory could be set before the war.

To appreciate the several different variations of the spasm strategy, it is useful to distinguish between deterrence goals and defense goals in the sense defined by Snyder: "Deterrence means discouraging the enemy from taking military action by posing for him a prospect of cost and risk out-weighing his prospective gain. Defense means reducing our own prospective costs and risks in the event that deterrence fails."<sup>6</sup>

If one stresses defense or damage limitation in a spasm strategy, then one can argue plausibly for such measures as civil defense, very early and reliable tactical warning, counterforce capability, means for poststrike reconnaissance and damage assessment, and a survivable command and control that can coordinate strikes and restrikes. For example, if one knows the location of enemy offensive bases containing strategic delivery weapons unlikely to be included in the first salvo, then early tactical warning may allow quick retaliation with counterforce missiles against these bases in order to blunt the follow-on enemy attack. If some of these counterforce missiles are likely to be destroyed by the enemy's initial blow, then some

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<sup>6</sup>Snyder, Deterrence and Defense, p. 3. A thorough discussion of these distinctions in terms of strategic nuclear war is found in ibid., pp. 52-119.

degree of centralized, survivable command and control for retargeting our remaining counterforce missiles may enhance the blunting effect. Or, if one has adequate delivery capability, a sufficiency of nuclear weapons, and only a limited knowledge of locations and status of enemy delivery vehicles, then a widespread counterforce strike against all known enemy weapons bases might blunt the enemy's succeeding blows. Notice that in each of these cases, retaliatory forces would be held in reserve only in the expectation that further intelligence would allow them to be committed against undamaged or underdamaged targets.

On the other hand, if one is stressing deterrence and stability and a lessening of the arms race, a much simpler command-and-control capability might suffice. A smaller number of highly survivable strategic forces, such as Polaris and Minuteman missiles and aircraft on airborne alert might be given a simple go-order based on some threshold of nuclear detonation on the United States. No tactical early warning would be required; no retargeting or other postattack coordination would need to be planned; and few, if any, command posts would need to survive the initial blow. The spasm would be a reflex and could be delivered hours or days after the initial enemy attack.

Finally, a spasm attack could be launched, not in retaliation to an enemy blow, but as a first strike. In this case, the "warning" threshold mentioned above could be political or military. Typical cases might be a Soviet attack on a NATO ally of the United States; a limited war (conventional or nuclear) between the United States and the Soviets that we were losing or the Soviets were escalating; or a warning of imminent Soviet attack that seemed unambiguous to American political leaders. Once the attack was unleashed, it would proceed in one of the ways described above, with the possible advantage that our forces would be striking first.

Clearly, many different levels and types of offensive forces and many different needs for command and control can be associated with a policy of spasm response. It is neither necessary nor within the scope of this essay to distinguish these or to argue for one or the other. Such arguments can be found in Kahn, Kissinger, and Snyder.<sup>7</sup> Let us consider instead the difficulties of spasm response and the ways in which they can be overcome.

#### The Need for Selective Response

The major difference between command and control for a selective response and that for a spasm response is that selective response stresses the need for:

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<sup>7</sup> See Kahn, op. cit.; Snyder, op. cit.; and Henry A. Kissinger, The Necessity for Choice.

1. A highly survivable politico-military national command and commensurately survivable communications between this command and the offensive forces and warning elements.
2. A system for warning, reconnaissance, and damage assessment that allows some deliberate classification of the situation before, during, and after enemy attacks.
3. A strategic strike force that can weather the enemy's most successful disarming attack and whose surviving elements can be committed in varying degrees against classes of targets selected according to the intelligence furnished by the warning and reconnaissance systems.
4. Politico-military management of both the planning of the national command and of the operational conduct of the command during crises and conflict.

Clearly, these measures are only relatively achievable, and the degree to which they can be achieved varies significantly with time and intelligence. Before discussing these needs in detail and considering some criteria of performance, let us review the arguments in favor of a capability for selective response.

In brief, the argument goes as follows. Although many aspects of the conduct of thermonuclear war seem much more predictable and calculable than is the case for conventional war, these predictions ignore many factors--technical, military, political, and diplomatic. The only thing certain about a nuclear war is its high uncertainty. The strategic war plan must provide for dealing with the unforeseen and the unexpected.

Because of the problems associated with instability--including the accidents, unauthorized behavior, confusion, escalation, and miscalculation it is essential that an extremely centralized, tight control be maintained over the strategic strike forces. The safety catch on the trigger, to use Read's analogy,<sup>8</sup> must in some sense be overengineered and overindoctrinated.

Also, a nuclear stalemate has been or is being reached as each side adds to the number, mix, and survivability of its strategic delivery vehicles, as nuclear weapons become more plentiful, cheaper, and more varied, and as warning and defensive capabilities lag behind offensive capabilities. No technological breakthroughs to end this stalemate are foreseen for the coming decade and, consequently, an all-out central war does not promise to be a viable or sensible strategy.

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<sup>8</sup>See Read, op. cit.

On the other hand, it is also possible that thermonuclear exchanges will take place. They may be limited or widespread, accidental or intentional, deliberate or desperate. While the factors of uncertainty, instability, and stalemate must be kept in mind, an improved outcome could be realized in many plausible situations if our response were selective rather than all-out.

Finally, also as a result of the stalemate and uncertainty arguments, it does not seem at all likely that the adoption of a selective response capability by a major nuclear power would necessarily weaken that power's capability to deter the opponent's nuclear forces or threats to use those forces. In fact, the existence of such a capability and the background of its existence might well be shown to strengthen the deterrent.

The dominating role of uncertainty cannot be overestimated. Uncertainty is implicit in most conflict situations. Consider some scenario fragments as testimony:

1. A United States accident that causes a nuclear explosion within the Soviet Union or one of the satellites leads to a minor Soviet response (from one to fifty weapons) that could be contained through a capability for tight control and selective response. Some of the Soviet weapons are directed at the highest peacetime command centers in the United States, such as Washington, D. C., or SAC headquarters in Omaha. Or they may be directed at our NATO forces.
2. During a crisis, a sudden conflict within the Soviet leadership causes commitment of a portion of the Soviet Union's forces, but also a sudden opportunity for negotiation and agreement.
3. A serious misunderstanding exists within our own command system with respect to the meaning of plans or indicators, so that in a period of crisis, part of our force is alerted or committed in a provocative or unplanned manner. For example, as Hoare points out, a major source of the conflict between Truman and MacArthur during the Korean War was a basic and continuing misunderstanding of means, objectives, and directives: "The General never intended to challenge the authority of the Commander in Chief to direct the war, nor did he consider that he had done so."<sup>9</sup> There are infinite opportunities within command and control for such misunderstandings, some at a quite trivial level, that can still have extremely serious consequences.

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<sup>9</sup>See Wilber W. Hoare, Jr., "Truman," in Ernest R. May (ed.), The Ultimate Decision (New York: George Braziller, 1960), pp. 179-210.

4. During a crisis, or because of a serious miscalculation, the Soviets attempt a pre-emptive disarming strike. This strike is extremely unsuccessful--it is ragged and uncoordinated. It is accompanied by defections and sudden intelligence data.
5. During the course of a nuclear exchange, Soviet defensive and offensive capabilities are much more effective than had been anticipated.
6. During a time of crisis, the Soviets successfully attack our tactical warning systems. According to some of our calculations, this is a bizarre and destabilizing action that invites pre-emption, but it is not at all clear that a spasm response will improve our situation. Or, during a period of relative calm, these systems are sabotaged.
7. After several more years of nuclear-arms build-up by both sides, the Soviets ruthlessly escalate a conflict in Europe or elsewhere, including full utilization of their conventional forces and nuclear capability.

Now, the basic limitations of spasm response in coping with situations like these are twofold: First, the threshold whose crossing would trigger the spasm cannot be adequately defined ahead of time in military or political terms. Second, the definition must be continuously adjusted in the light of operating experience, intelligence inputs, the world situation, our own and enemy capability, and events at the time. In fact, the definition of a threshold becomes a crucial and continuing act in the conduct of the conflict--it is one of the first stages of the conflict, not a preplanned decision.

For example, if we were to establish a national estimate that our strategic forces are quite survivable and dominant in numbers, that our national command and control is relatively survivable, that Soviet command and control is weak, that the location of Soviet offensive bases is well known, that political situations and deployment of weapons in NATO make accidents a serious concern, then we might decide that the Soviets must demonstrate the intent and the capability to mount an attack against our cities and against our national command before we will commit all our forces in a spasm attack. In this case, tactical warning might be an important input to the commitment decision; but, until nuclear detonations actually occurred in cities and in the national-command elements, only a portion or even none of our forces would be given a final go-order by the national command.

The above situation demonstrates the second shortcoming of a spasm response: At the time of initial conflict, the most rational course for the United States might not be to commit all its forces against preplanned targets. Instead, it might be advantageous to withhold forces for intrawar deterrence and negotiation.

Similarly, the nature of the first stages of the conflict (i.e., how it broke out, how it unfolded, what was succeeding and failing) might resolve targeting questions: To what extent should counterforce operations be attempted? How much collateral countervalue damage should be allowed? Which, if any, satellite countries should be attacked?

Arguments may also be developed against selective response. They may be arranged in two somewhat contradictory classes: those that say that such a capability is provocative, and those that argue that it weakens the credibility of our deterrent. It can be argued that a capability is provocative because many of the functions stressed in selective response (e.g., counterforce strikes and poststrike data collection) weaken the enemy's strategic capability, favor (or appear to favor) a first strike, and add fuel to the nuclear-arms race. In practice, there could be truth to this argument. Under the banner of selective response, proponents could argue for more than is needed and could divert resources away from preparation for conventional military and nonmilitary action. On the other hand, investments in control, restraint, and protection, if properly understood, managed, and publicized, should seem and be stabilizing.

The arguments supporting the belief that selective response weakens the deterrent are threefold: (1) It invites a disarming attack and subsequent blackmail; (2) it weakens our retaliatory blow by delaying the response, thus allowing greater damage to our strategic forces and their command-and-control; and (3) selective response is a sign of indecision and lack of will. The answers to the first two arguments are the same: At present and in the foreseeable future, the portion of our retaliatory capability that can ride out a counterforce first strike must and can be more than adequate to deter postattack blackmail and withstand some delays in commitment. It is certainly true that a greater force can be committed earlier in the war rather than later, but a force protected by mobility and hardening is much less sensitive to delay. The argument that selective response could be interpreted by the enemy as a sign of indecision or lack of will ignores the problem of establishing the credibility of a response. In the absence of any experience with nuclear exchanges, it would seem likely that credibility will be established by conventional fighting, by conduct during negotiations, and by what is said or done in building and operating strategic forces. These are complex and numerous factors that will be interpreted by the enemy in often unpredictable ways. The declaration of an all-or-none doctrine would not seem likely to be an important element in communicating any credibility.

To advocate providing a command-and-control capability for selective response is not to say that in all or even in the most likely cases, selective response will be the best course of action. Rather, it means that we should not tie our hands by rejecting such a capability merely because some simple calculations or intuitions make it seem unnecessary or irrational. Since command and control is an incredibly complex mixture of people and attitudes and things, it takes time to build a command capability and, more important, it requires energy and attention to sustain it in the face of changing environments and little use. If,

in the uncertain world of thermonuclear capability, it seems even possible that a capability for selective response might be valuable in a time of crisis or conflict, then it would be grossly irresponsible not to provide the capability if feasible and not excessively costly.

President Kennedy, in his special message to Congress on defense spending (March 28, 1961), indicated that our present national policy includes such a capability:

Our arms must be subject to ultimate civilian control and command at all times, in war as well as peace. The basic decisions on our participation in any conflict and our response to any threat--including all decisions relating to the use of nuclear weapons, or the escalation of a small war into a large one--will be made by the regularly constituted civilian authorities. This requires effective and protected organization, procedures, facilities, and communication in the event of attack directed toward this objective, as well as defensive measures designed to insure thoughtful and selective decisions by the civilian authorities.

And, in the same message:

This deterrent power depends...on...the flexibility and sureness with which we can control [our missiles and bombers] to achieve our national purpose and strategic objectives.

And finally:

The basic policies...lay new emphasis on improved command and control--more flexible, more selective, more deliberate, better protected, and under ultimate civilian authority at all times. This requires not only the development and installation of new equipment and facilities, but, even more importantly, increased attention to all organizational and procedural arrangements for the President and others. The invulnerable and continuous command posts and communications centers provided in these recommendations...are only the beginning of a major but absolutely vital effort to achieve a truly unified, nationwide, indestructible system to insure high-level command, communication and control, and a properly authorized response under any conditions.<sup>10</sup>

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<sup>10</sup> See "Text of President Kennedy's Special Message to Congress on Defense Spending," The New York Times, March 29, 1961, p. 16.

### Providing Selective Response

The first requirement for selective response is a strong capability at the national level for exercising operational command in both peace and war. The peacetime functions include:

1. Assessing the current and long-term threat and the possible options for meeting this threat. As indicated above, the threat is not a known, single-valued function. It is an incredibly complex set of contingencies and uncertainties. The possible responses are similarly varied: To what extent will warning be used for alerting or committing forces? How alertable should the strategic force be? When should counterforce or countervalue strikes be used? What targets should be attacked?
2. On the basis of this assessment, receiving Presidential guidance for the development of a more limited set of war plans, and seeing that detailed war plans are prepared and made known to the operational military commands.
3. Establishing and maintaining the national command-and-control apparatus to be used in crisis or wartime, including national centers, communications with subordinate centers and the forces and sensors, chains of command and succession, and relationship with nonmilitary agencies such as CIA and the State Department.
4. Exercising this system, assessing its capabilities, correcting weaknesses where possible, and revising plans where necessary.
5. Establishing a relation between operational command and non-operational activities of the Department of Defense, such as logistics support, research and development, and intelligence, so that operational plans and needs are reflected in these activities.

What might be the characteristics of a wartime system allowing selective response? What are some of the criteria that govern its design? First, the national center and its communications with subordinate centers should be so well protected that only an intentional and well-delivered attack against the complex could put it out of operation. Clearly, absolute survivability is impossible, considering the full range of destructive means available to the enemy: missiles launched from submarines, chemical and bacteriological agents, and sabotage. On the other hand, the national system should not be vulnerable to multiple accidents or ragged enemy attacks, or be a bonus in any enemy counterforce attack.

It does not seem possible to protect a single center against all forms of attack. But a combination of centers, some underground and some mobile, could meet the requirements for survivability. These centers could be connected with one another and with unprotected peacetime centers; they could operate under a line of succession, with each surviving center receiving the same information and following the decision of the one in command at that time. Technical problems of this approach do not seem highly difficult.

Each of these national wartime centers would be continuously operational and manned with experienced political and military leaders. The tempo of central war is such that no leader can be trained once the crisis is underway; the complexity of war is such that extensive prior understanding is required. The commander of any back-up center might suddenly become commander in chief. At that moment, he must know the world-political situation, the strategic-intelligence situation, the capabilities of his forces, the content of war plans, the role and credibility of warning, and the language and doctrine of his subordinates. To maintain such depth of understanding is a time-consuming task. No individual holding another position (such as that of SAC commander) could be adequately prepared for his responsibilities unless he spent considerable time becoming familiar with the entire problem and the President's policies.

It is conceivable that the national centers could all be destroyed. In this case, it might be desirable to consider a spasm response by remaining forces that had been given positive indications that the national centers had indeed been destroyed. In order to ensure that such a response did not take place as the result of an unlikely failure in communications or display, an attack by an Nth country, or unauthorized behavior, other indicators should be required by local forces before they unleashed the spasm. Such indicators could include tactical-warning data and nuclear-detection indications from intermediate headquarters and nearby cities.

Recognition by the Soviets that destruction of the national command would unleash a spasm counterattack on their cities would tend to deter them from attacking the national-command capability. For such deterrence to be most effective, the Soviets might also need assurance that the national command did not greatly enhance our ability to fight a war. Given a relatively survivable national command, there could easily be a tendency to assign to it the task of centralized management of the execution of all phases of our war plans. There is little doubt that the effectiveness of our forces in an all-out war would be significantly enhanced by a central management with access to all available data: location and types of committed and uncommitted forces on both sides, the forces and value already destroyed, and the attacks in progress. The central command could then retarget available forces against undamaged forces and value and could coordinate penetration of different offensive vehicles to damage enemy active defenses and to minimize interference

among our own forces. However, there is a dilemma. If this enhancement is significant--even, say, worth more than 30 per cent of the remaining undamaged forces--then the enemy has a high incentive to destroy this centralized capability. If the enhancement is insignificant, then the attempt to centralize has not paid off and the over-all command and control might be much less effective during the holocaust than if realistic, decentralized management of the execution had been planned in the first place.

Accordingly, it is probably desirable that the national command does not manage in detail the execution of any large-scale strategic effort. Instead, it should restrict its demands for information and the scope of its decision to matters of policy, such as classifying the politico-military situation and selecting one of several alternative actions. It would be highly desirable for the command to have continuous warning and reconnaissance data--not only spasm-like warning of an initial attack, but also continuing indications of the size and nature of enemy commitments, estimates of enemy targeting and success, estimates of damage suffered by United States forces and value, and estimates of the success of United States forces if the national command commits some to the conflict. The extent to which such data can be collected requires much study. Once more, it should be stressed that such information is not required for detailed force management--it is needed for centralized selection of a few strategic choices.

Finally, we come to what might become one of the most crucial roles of the national command: the provision of plans and capability for negotiation, termination, and inspection. If the enemy does not attack our national command, and if we do not attack his, if he understands his need for a survivable and selective command capability, then providing communication between the two commands is relatively easy. However, what can be communicated? What actions can each side take to contain and stabilize the many situations that can arise, ranging from small accidents to extensive nuclear interchange? What facilities for inspection would each side require to ensure that these actions were taking place? Innumerable possibilities and scenarios can be invented, all of which need much research. Probably the most crucial areas are containment of accidents and the use of limited retaliations during crises when other forms of coercion and negotiation have failed and when the only other alternatives are defeat or escalation to major nuclear exchanges.

#### The Needs of Limited Strategic War

Clearly, many of the features discussed above regarding a command capability for selective response are needed for limited strategic war. In fact, command and control for limited retaliation is a special case of command and control for selective response; the possibility that one may wish someday to use limited retaliation, or be forced to respond to it, is one of the factors favoring a command-and-control capability for selective response. Limited

retaliation requires a strong, national politico-military command and the control of forces and doctrines during the incredibly tense period of negotiation and waiting that precludes escalation to a spasm after the limited strikes. The use of warning and the problems of negotiation and inspection are almost identical in nature and would probably involve many of the same elements.

The one feature of selective response that might not seem necessary for the lower end of the spectrum of limited retaliations is a highly survivable national command. One could argue that the enemy had played Read's "Antigame"<sup>11</sup> to our game of limited retaliation if he attacked our national command. On the other hand, limited retaliation using only a few weapons will certainly cause high tension, calculations on both sides that could lead to pre-emption (and possibly a very ragged pre-emption), an extreme alert and a hair-trigger posture by both sides, pressures on command and authority--in short, all the conditions that require the highest restraint and confidence by subordinates on both sides that their national command is really in command, that it does not feel imminently threatened, that it is not about to pre-empt. This level of confidence and understanding by subordinate forces can be achieved only after years of developing a command and control, so that it becomes obvious to the forces that their national command understands the capability of the force and is making every effort to survive.

It is also essential that the Soviets have confidence that the United States command and control is completely in command of forces, that restraint is being shown during periods of coercion and negotiation, and that provisions have been made for the high command to survive accidental, unauthorized, or misdirected Soviet strikes. The dangers that either side will pre-empt with a widespread strike will increase to the degree that these requirements are not met.

Since limited retaliation is a substrategy of selective response, the only unique demands on command and control associated with this strategy would be the functions of planning, indoctrination, and exercising. Targets and vehicles must be selected for initial strikes, contingent responses for different Soviet reactions must be provided, and, probably most difficult, commanders at all levels must understand that the strikes may be used. They must anticipate the pressures and situations their commands will face that could lead to unauthorized or accidental behavior. We mentioned earlier that a strategy of selective response can be used with very different mixes and levels of strategic forces, defensive and warning capability, and passive protection. The same situation probably applies to limited strategic wars. For example, if we had little

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<sup>11</sup> See Knorr and Read, op. cit., pp. 105-7.

capability for postattack reconnaissance of the Soviet Union, limited strikes could probably still be conducted without this capability. The tactics of particular strikes might be different (e.g., in the case cited, a larger number of delivery vehicles might be required), but it does not follow that a special panoply of vehicles, sensors, and command and control would be needed.

As other chapters in this volume have noted, the concept of limited strategic war can include many different ways of using strategic weapons as instruments of national policy. Some of the tactics for coercion and bargaining seem highly undesirable, but not necessarily less desirable than the alternative actions available to the decision-maker. The role and danger of strategic weapons in the coming decade are uncertain: The evolution of strategic arms may continue at its present pace with the development of third-generation ICBM's, offensive space weapons, real-time reconnaissance satellites, and active defense systems against all of these threats. Or, the evolution of strategic arms may be slowed or halted by negotiated or unilateral arms-control measures. Whichever the case, there will be conflict situations in which some form of limited strategic warfare must be considered as one of the alternatives. Similarly, it is uncertain what further consideration of this strategy will suggest, or how the forms and issues of conflict with present and potential enemies will develop. These uncertainties argue strongly for a continuing effort to provide a command-and-control capability that allows maximum flexibility in initiating or responding to strategic attacks.

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System Development Corporation,  
Santa Monica, California  
COMMAND AND CONTROL FOR SELECTIVE RESPONSE.  
Scientific rept., SP-635, by H. D. Benington.  
13 May 1963, 16p.

Unclassified report

DESCRIPTORS: Command & Control Systems.  
Nuclear Warfare.

Considers command and control in the conduct of two different strategies of central nuclear war: 1) a spasm war that unleashes an unlimited nuclear strike as quickly and thoroughly as possible; 2) a strategy of selected response that allows deliberate commitment of small, moderate, or very large portions of the

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strategic offensive capacity of the United States in accordance with both military and political considerations. Also considers the command and control required for conduct of limited strategic war in relation to these two alternatives. Concludes that, in the next decade, it is both feasible and desirable for our command-and-control system to provide the capability for a selected response; that such a command-and-control capability would, in most cases, allow employment of a substrategy of limited strategic war and that provision of this latter feature would require minor, but not costly, additions in plans and doctrines and; that acquisition of an operational capability for either limited strategic war or for a war of selective response presents some command-and-control needs that do not apply to spasm response.

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